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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,003	09/13/2007	Ted Maddess	SPR10150P00080US	7250

32116 7590 11/01/2010

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EXAMINER
JANG, CHRISTIAN YONGKYUN

ART UNIT	PAPER NUMBER
3735	

MAIL DATE	DELIVERY MODE
11/01/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/581,003	MADDESS ET AL.	
	Examiner	Art Unit	
	CHRISTIAN JANG	3735	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 August 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/6/10*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office action is responsive to the Amendment filed on August 6th, 2010.

Information Disclosure Statement

2. IDS filed on August 10th, 2010 has been considered.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-5, 7-11, 13-17, and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maddess et al. (US 2003/0163060) in view of Livingstone et al. (USP #5,474,081).

5. As to claims 1 and 11, Maddess teaches a method and corresponding apparatus for assessing a sensory nervous system of a subject (Abs), including: simultaneously presenting two or more parts of the sensory system with respective sequences of stimuli ([0010]) using a stimulator ([0030]), varying each sequence over time between a null stimulus and one or more less frequent non-null stimuli ([0011]) using a processor ([0031]), controlling the variation of each sequence so that neighboring parts of the sensory system are less likely to receive simultaneous non-null stimuli ([0011]), measuring one or more simultaneous responses by the subject to the sequences of stimuli ([0012]) using a monitor ([0031]), and determining weight functions from the response for assessment of the sensory system ([0012]). Maddess fails to teach the use

of spatially sparse stimuli. However, Livingston teaches the use of spatially sparse stimulus (col. 7 line 57 to col. 8 line 13), and further teaches the monitoring of each of the responses (col. 2 lines 57-63) to obtain characterizations of neurological function via evoked potential measurements (col. 2 lines 57-63). As such, it would have been obvious to one of ordinary skill in the art to modify the assessment of a sensory nervous system taught by Maddess with the use of a spatially sparse stimuli as taught by Livingston to prevent masking of signals by clutter and noise with identical or close proximity of stimuli to obtain clear indications on individual brain function.

6. As to claims 2 and 14, Maddess teaches the non-null stimuli appear in each sequence at a rate of about 0.25 to 25 per second ([0028]).

7. As to claims 3 and 15, Maddess teaches the possibility of neighboring parts in the sensory system having simultaneous non-null stimuli is zero (Fig. 3; [0078]).

8. As to claims 4 and 16, Maddess teaches the sensory system is a visual system and multiple parts of the retina are presented with stimuli ([0003]). Livingston teaches a spatially sparse stimulus.

9. As to claims 5 and 17, Maddess teaches the sensory system is a visual system and the sequences include either binocular or dichoptic stimuli ([0072]).

10. As to claims 7 and 19, Maddess teaches the parts of the sensory system are in the retina, the ears, the skin, or in the brain of the subject ([0014]; [0056]).

11. As to claims 8 and 20, Maddess teaches the stimuli are selected from a range of signals such as light or sound frequency, or pressure ([0014]; [0076]).

12. As to claims 9 and 21, Maddess teaches the parts of the sensory system receiving stimuli form a region divided into classes and only one of the classes has a non-zero probability of receiving stimuli at any time ([0022], claim 1). Livingston teaches a spatially sparse stimulus.

13. As to claims 10 and 22, Maddess teaches the responses are nonlinear and the weight functions are Wiener or Volterra kernels (claim 21).

14. As to claim 13, Maddess teaches the monitor measures response to the stimuli by way of electrode potentials on the head of the subject ([0002]).

15. Claims 6 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maddess et al. (US 2003/0163060) in view of Livingstone et al. (USP #5,474,081) as applied to claims 1 and 11 above, and further in view of Thornton (USP #6,743,183).

16. As to claims 6 and 18, the combined teachings of Maddess and Livingston fail to teach the sensory system is an aural or tactile system and the ears or skin are presented with spatially sparse stimuli. Maddess does teach the sensory system is an aural or tactile system and the ears or skin are presented with stimuli ([0014]). Thorton teaches the use of a spatially sparse auditory stimulus to evoke an electrophysiological response and to make an assessment based on the measurement (col.4, lines 24-37; col. 7 lines 32-40). As such, it would have been obvious to one of ordinary skill in the art to modify the assessment of a sensory nervous system taught by Maddess, incorporating the use of a spatially sparse stimuli as taught by Livingston, with the use of spatially sparse auditory stimuli as taught by Thorton in order to utilize an audio

stimuli versus a visual stimuli to obtain indicative measurements of the user's brain function which may give additional and/or other diagnostic information of the user's brain function.

Response to Arguments

17. Applicant's arguments filed August 6th, 2010 have been fully considered but they are not persuasive.

18. As to claims 1 and 11, applicant has first presented that the term "spatially sparse" stimulus ensemble is one where few or no stimuli in the ensemble are co-presented with their spatial neighbors and argues that the stimuli taught of Livingston differs from this definition of a spatially sparse stimuli. However, the specification fails to provide this explicit definition of the term, nor are the limitations found in the claim language. In addition, a definition of having few or no stimuli co-presented with their special neighbors interpreted in the broadest reasonable sense would not preclude the teachings of Livingston from being interpreted as being spatially sparse. For example, with the amount of the null stimuli presented in Livingston's checkerboard/columns, the amount of stimuli can be considered spatially sparse, especially including the vast area of null stimuli surrounding the checkerboard pattern.

19. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Conclusion

20. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTIAN JANG whose telephone number is (571)270-3820. The examiner can normally be reached on Mon-Thurs (10-9:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Marmor can be reached on 571-272-4730. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Charles A. Marmor, II/
Supervisory Patent Examiner
Art Unit 3735

CJ
/C. J./
Examiner, Art Unit 3735
10/23/10